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TITLE: Family of mammalian potassium channels, their cloning and their use especially for the screening of drugs

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US-CL-CURRENT: 435/69.1, 435/320.1, 435/325, 536/23.1

CLAIMS:

We claim:

1. An isolated and purified nucleic acid molecule encoding a mammalian protein which comprises 2 P domains and 4 transmembrane segments, and is competent to transport potassium across a membrane.
2. An isolated and purified nucleic acid molecule encoding a human protein which comprises 2 P domains and 4 transmembrane segments, and is competent to transport potassium across a membrane.
3. The nucleic acid molecule of claim 2 encoding a human protein which exhibits weak inward rectification.
4. The nucleic acid molecule of claim 3 which is expressed in brain and heart tissue and in addition, in at least one of the following tissues: placenta, liver, skeletal, muscle, kidney and pancreas.
5. The human nucleic acid sequence of claim 2 which comprises the sequence represented by SEQ ID No. 1.
6. A self replication vector comprising the nucleic acid molecule of claim 2.
7. A cell transformed with the self replicating vector of claim 6, which cell expresses a human protein which comprises 2 P domains and 4 transmembrane segments, and is competent to transport potassium across a membrane.
8. A micro-injected cell comprising the RNA transcript synthesized from the nucleic acid molecule of claim 2, which cell expresses a human protein which comprises 2 P domains and 4 transmembrane segments, and is competent to transport potassium across a membrane.

potassium across a membrane.

9. The transformed cell of claim 7, which cell is selected from the group consisting of prokaryotes and eukaryotes.

10. The transformed cell of claim 9 which is a bacterium.

11. The transformed cell of claim 10 which is a yeast, insect, plant or mammalian cell.

13. The method of claim 12 wherein the cellular host is selected from the group consisting of prokaryotes and eukaryotes.

14. A pharmaceutical composition for the compensation of a deficiency in potassium channels at the level of one or more tissues, which comprises an isolated and purified nucleic acid molecule encoding a human protein comprising 2 P domains and 4 transmembrane segments which protein is competent to transport potassium across a membrane.

15. A pharmaceutical composition which comprises human cells transformed with the nucleic acid molecule of claim 2.